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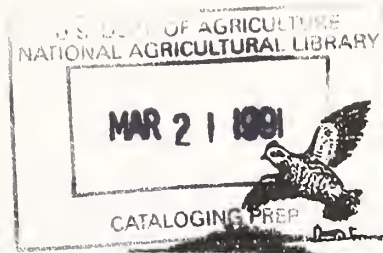
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## Habitat management for

# **BOBWHITE QUAIL**



05 MAR 1980

### In Kansas

The bobwhite quail (*Colinus virginianus*) is a very popular native game bird in Kansas. It is found throughout the state but is most abundant in the eastern part (Figure 1). In western Kansas the bobwhite is usually associated with wooded areas and streams.

Another quail found in Kansas is the scaled quail (*Callipepla squamata*). Its distribution is limited to the semi-arid, sandy, grassland regions in south-western Kansas. Management of the scaled quail is not covered in this guide.

Preferred habitat for the bobwhite is a combination of grassland, cropland, brushy areas, and woodland in such a mixture as to provide an abundance of "edge"--those borders where two or more types of cover come together. Grasslands are utilized mainly for nesting and brooding; cropland for feeding and dusting; and brushy and wooded areas for escape cover, roosting, and winter cover and feeding. The quality of habitat and the closeness or mixture of cover types usually determines the number of birds an area can support.

Farming operations which destroy or reduce the size of woody areas are very detrimental to quail populations. Fall tillage of grain fields is also detrimental in that it covers waste grain and knocks down stubble which is very beneficial to quail and many other species of wildlife during the winter months. The feeding habits of the bobwhite have many benefits. During spring and early summer they consume large numbers of insects, and weed seed is an important part of their year-round diet.

Bobwhites stay in small groups called coveys during most of the year. When evening comes, the covey roosts on the ground, squatting in a circle with tails pointing toward the center and heads facing out. This formation not only insures warmth but also provides a lookout in every direction.

In early spring the coveys begin to break up and mate selection begins. By early May pairs are formed when a hen accepts a cock by allowing him to mate. The two quail are then inseparable for the rest of the season.

Two to four weeks after mating, nesting begins. Preferred early season nesting cover is dry grass from the previous year. Once the nest meets the approval of the female, eggs are deposited at the rate of about one per day. The average number of eggs in a clutch is 14. Incubation starts as soon as the last egg is laid. If predators, farm equipment, or heavy cold rains do not destroy the nest, the eggs hatch in about 23 days. If a nest is destroyed, the pair will normally reneest. Like most animals, quail are persistent in their drives to perpetuate the species.

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Throughout the winter the covey is set in a way of life that changes very little from day to day. The night is spent in grassy cover near a weedy or brushy area. Shortly after sunrise the covey moves, as a unit, to the feeding area. When food is in good supply, little time is needed to satisfy their appetites. They then move to a loafing area and spend the rest of the morning and afternoon. In late afternoon they move to the feeding area again before going to the roosting area for the night. Severe winter weather and approaching storms interrupt this routine and during these periods the covey often feeds all day. During severe storms, the birds may not be able to leave the roost for a day or two and the food supply may be covered with snow or ice. This period of extreme cold temperatures and deep snow or ice is when mortality takes its largest toll. Good habitat is of the greatest importance at this time.

As spring arrives, pairing once again takes place. If the same amount of habitat is available and winter weather was not extreme, the spring population will be very close to that of the previous year.

Food--Since quail are primarily seed-eaters, grain and weed seeds are an important part of their diet. Grains such as milo, corn, soybeans, and wheat are used when they are available.

Seeds of weeds such as ragweed, sunflower, smartweed, foxtail, and wild barley are often used. Numerous studies have indicated the value of insects for quail chick survival. The first few weeks of a chick's life are the most critical and small insects are the most important item of the diet. Adult birds also utilize insects. Fresh greens and berries make up a portion of the spring, summer, and fall diet.

Cover--Bobwhite quail are usually associated with four habitat types. These habitat types are grassland, cropland, brushy areas, and woodland. An ideal quail area would have a mixture of these four; however, all are not necessarily needed in order to have a suitable quail population.

Grass serves its best purpose as nesting and brood cover. At least two out of three quail nests are found in grassland areas. Overgrazed pastures and harvested hayfields offer little cover. Many times grass clumps that are inaccessible to cattle furnish the needed nesting areas. Native grass range-land, in good to excellent condition, provides many of the needs of the bobwhite.

A primary factor in increasing the abundance of quail habitat was the creation of cropland by early settlers. Sod breaking and early farming practices created disturbed areas and "edges" for ideal quail habitat. While the old, inefficient type of farming was beneficial, modern farming techniques such as the use of herbicides and insecticides, land leveling which destroys potholes and weedy draws, and the removal of hedge and fencerows are bad for quail. Many conservation practices which prevent soil erosion and conserve water are beneficial to both the farmer and to wildlife.

Brushy areas include osageorange hedgerows, plum thickets, and sunflower or ragweed patches. Normally any low growing woody plants or woody-type forbs provide a necessary part of the bobwhite's habitat. Brushy cover adjacent to cropland or other food sources is very desirable. Other brushy-type plants used for cover include redcedar, blackberries, currants, elderberries, buck-brush, and gooseberries. Quail numbers are usually closely associated with the amount of good brushy cover available.

Woodlands serve best when they are associated with brushy undergrowth or adjacent brushy cover. Most woodlands are associated with rivers and streams and are not intensively managed for timber or quail. Their major value to quail is limited to that area adjacent to brushy areas and cropland where the highly desirable "edge" effect is created that is so conducive to many species of wildlife.

Water--Quail obtain water from dew on vegetation and from the insects and berries they eat. Free water from streams, ponds, and puddles is also used.

#### HABITAT MANAGEMENT SUGGESTIONS

The key to successful management of quail is the proper management of their habitat. Various types of cover are needed at different seasons to serve the needs of bobwhites. Usually one or two types of habitat are available, but possibly an additional one needs to be added. The main method of improving quail habitat is to increase the "edge"--that area where two habitat types come together.

Develop Cover--The establishment of brushy areas or native grass in odd areas, field corners, and fencerows near cropland, will often encourage quail to use a site. Planting one or two rows of shrubs between cropland and grassland will greatly increase the value of existing cover.

Tillage--Corn, milo, and soybean stubble should not be fall tilled since it provides a food source and some cover for quail during the critical winter period. If tillage is needed, undercutting implements should be used to keep from burying stubble, grain, and other seed.

Shelterbelts and Windbreaks--The establishment and maintenance of shelterbelts and windbreaks, in addition to meeting their primary conservation objectives, may also provide winter cover and food for quail. Evergreens and shrubs are of special value.

Mowing or Burning--Quail favor native grass hayland, rangeland, roadsides, and odd areas for nesting. If nesting cover is in short supply, quail may nest in alfalfa and cool season grass and haying should be delayed until after July 1. Burning of native grass about every five years may be needed if excessive amounts of mulch accumulate. This allows the birds to travel through the grass easily. If burning is practiced it should be done during late spring and much caution should be exercised.

Other Precautions--Late spring burning or tillage, during May and June, should be avoided as this may destroy nests. The application of insecticides should also be avoided or delayed until after the first of August when the demand for insects is reduced. Label directions and precautions should be observed when using all chemicals.

The Soil Conservation Service, local conservation districts, the Kansas Fish and Game Commission, and the Kansas State University Cooperative Extension Service offer competent guidance on soil, water, plants, and wildlife habitat management.

### KANSAS

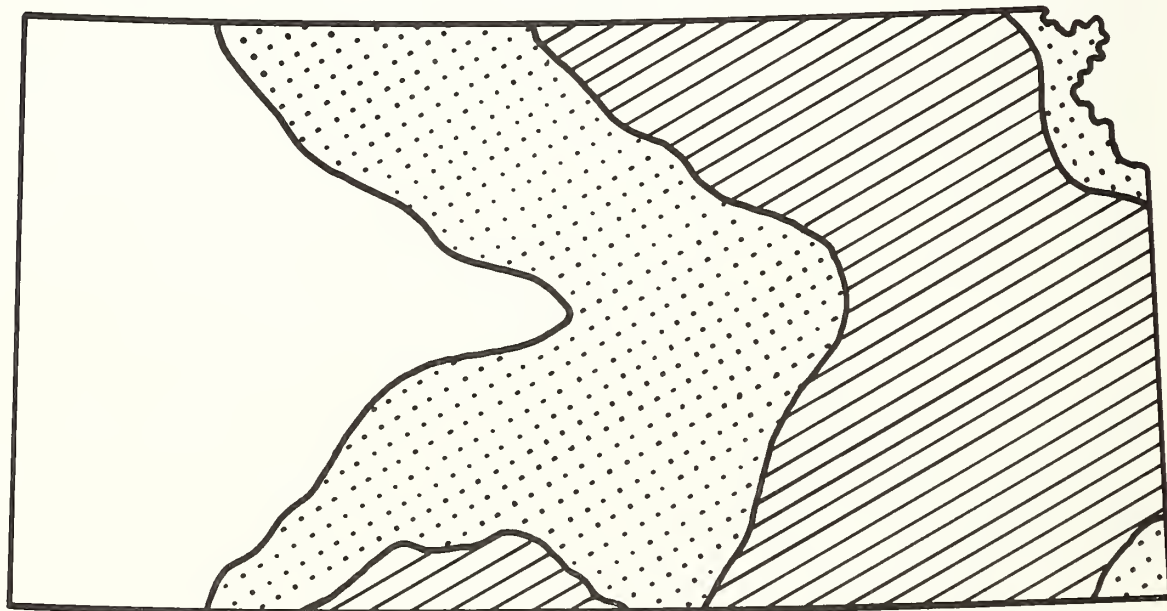


Figure 1.

KF & GC-1978

### GENERAL DENSITY DISTRIBUTION OF BOBWHITE QUAIL \*

High



Medium



Low



\*Locally abundant populations can occur in all areas where sufficient habitat is available.



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